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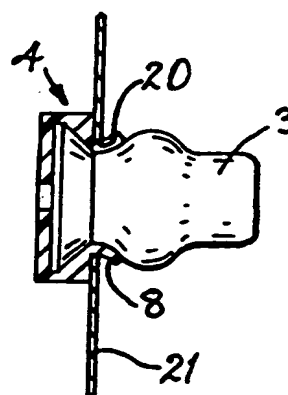
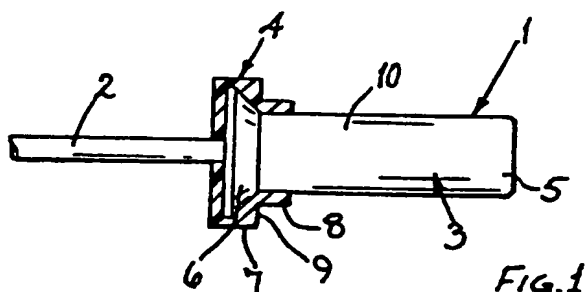
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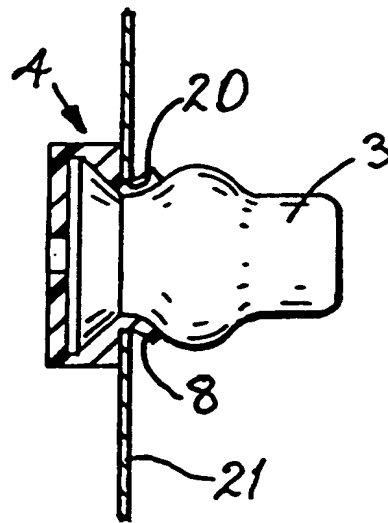
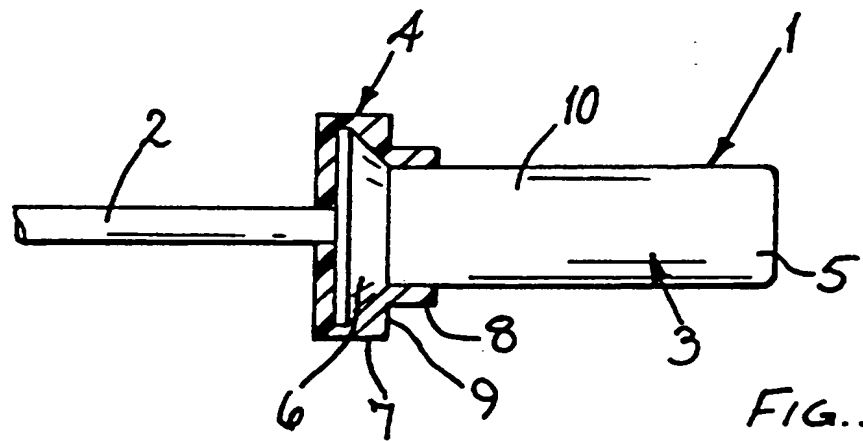
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(54) Blind rivet for sealing holes

(57) The vent hole 20 of a double-glazing unit is sealed by setting a blind rivet 1 by means of a mandrel 2 in the vent hole 20, the rivet flange 6 having a plastics moulding formed around it and partly along the shank 10.



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IMPROVED BLIND RIVET

The present invention is concerned with a blind rivet assembly, and in particular with such an assembly for use in 5 glazed window assemblies.

Glazing assemblies may typically take the form of a pair of glass sheets arranged in a spaced parallel relationship separated by a spacing unit. In order to 10 improve, inter alia, the heat insulation function of the glazing assembly the air between the glass sheets is replaced by another gas. In order to perform this operation two holes are present in the glazing assembly, one of which serves to extract the air, the other to introduce the 15 replacement gas. On completion of the operation the holes are sealed.

Clearly it is necessary for the seal to be air-tight.

20 It is known to use blind rivet assemblies to seal the holes. When aluminium blind rivets are used, due to the soft and thin nature of the material, variations of the hole size in the glazing assemblies, and fluctuating temperatures in use, such blind rivets do not consistently seal. The 25 result of which air is leaks into the glazing assembly causing misting of the assembly to occur.

In order to overcome this, the assembly of US 5 345 734 is known, in which an open ended blind rivet assembly is 30 provided comprising a tubular rivet having at one end a head flange, and a mandrel which passes through the tubular rivet, a head portion on the mandrel abutting an end of the tubular rivet remote from the head flange, the tubular rivet and mandrel head extruding within a plastic plug. The rivet 35 assembly is set by movement of the mandrel towards the head

flange. Setting of the rivet holds the plastics plug in position and thereby seals the glazing assembly.

It is desired to produce a rivet assembly, that is simple to produce and provides effective sealing of a glazing unit.

According to the invention, a closed end rivet comprises;

- 10 a mandrel with a head;
- a tubular sleeve having a closed end, a flange and a shank intermediate the closed end and the flange; and
- a plastics moulding formed about the flange and a limited portion of the shank.

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The invention will now be described, by way of example only, with reference to the accompanying drawings, in which Figure 1 shows a blind rivet assembly according to the present invention, and

- 20 Figure 2 shows the blind rivet assembly of Figure 1 in a set condition.

Referring to Figure 1, there is shown a closed end blind rivet assembly 1. The assembly 1 comprises a mandrel 2, and rivet body 3 and a plastics moulding 4.

The mandrel 2 has a head portion separated from a stem portion by a break neck portion.

- 30 The rivet body 3 comprises a cylindrical member having a closed end 5 at one end and a flange 6 at an other. The flange 6 and the closed end 5 are joined by a shank portion 10.

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The moulding is of generally cylindrical form and has two portions, one of greater diameter 7 and one of lesser diameter 8, joined by a step 9. The portion of greater diameter is moulded around the flange 6 and the portion of lesser diameter extends along a portion of the rivet shank 10. The lesser diameter portion extends along the shank, a distance sufficient that in use it extends beyond the thickness of a channel in the glazing unit.

10 In use, the rivet assembly 1 is inserted into a hole 20 in a workpiece, namely a glazing assembly 21. The step 9 of the moulding abuts an outer side of the assembly.

The rivet is set in the normal way, that is the flange 15 6 (or rather the plastics moulding 4 about the flange) is held against the workpiece and the mandrel is pulled through the rivet body. Since the mandrel head is held at the closed end 5 of the rivet body, the rivet body is deformed radially outwards as the mandrel progresses through the 20 rivet body.

Variations in hole size and shape are accommodated by the portion of lesser diameter 8 being pushed radially outwards as the mandrel head progresses through the rivet 25 body.

The portion of lesser diameter 8 thus forms a positive seal with the hole 21.

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CLAIMS

- 1 A closed end blind rivet assembly comprising
a mandrel;
5 a rivet body having a flange at one end; and
a plastics moulding formed about the flange.
- 2 A blind rivet assembly according to Claim 1, in which
the mandrel has a head,
10 the rivet body further comprises a closed end at
another end, and a shank joining the flange to the closed
end; and
the plastics moulding extends along a portion of the
shank.
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- 2 A blind rivet assembly according to Claim 1, in which
the moulding is substantially cylindrical and has two
portions, one of greater diameter and one of lesser
diameter, joined by a step.
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- 3 A blind rivet assembly substantially as described
herein with reference to and as illustrated in Figure 1 of
the accompanying drawings.
- 25 4 A method of sealing a glazing assembly substantially as
described herein with reference to and as illustrated in
Figure 2 of the accompanying drawings.

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Patents Act 1977 Examiner's report to the Comptroller under Section 17 The Search report)	Application number GB 9511823.8
Relevant Technical Fields (i) UK Cl (Ed.N) F2H, F2B (ii) Int Cl (Ed.6) F16B 19/10 Databases (see below) (i) UK Patent Office collections of GB, EP, WO and US patent specifications. (ii)	Search Examiner P M WELLER
	Date of completion of Search 31 AUGUST 1995
	Documents considered relevant following a search in respect of Claims :- 1 TO 4

Categories of documents

X: Document indicating lack of novelty or of inventive step.	P: Document published on or after the declared priority date but before the filing date of the present application.
Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.	E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.
A: Document indicating technological background and/or state of the art.	&: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 0612074 A (GOODRICH) all Figures; see page 2 lines 88 to 118	1

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